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Note

A Warningly Colored Fly, *Stratiomys badius* Walker (Diptera: Stratiomyidae), Uses its Scutellar Spines in Defense

On two occasions adult males of *Stratiomys badius* Walker gave my thumb a painful prick with their sharp scutellar spines. In both instances I had grasped the fly with my thumb and index finger through the mesh of an aerial net, and I could feel it squirm slightly in my grasp as it drove the scutellar spine (s?) into the ball of my thumb. There was enough pain to make me withdraw my hand involuntarily—about equivalent to the prick of a fine insect pin. The spines might well have had a similar effect if the fly had been held in the bill of a bird or in the jaws of some other vertebrate.

The spines, sharp and about 1 mm long, jut up at an angle of about 60° from the caudal edge of the scutellum (Fig. 1). They occur in both sexes. I did not see the motion that drove the spine (s?) into my thumb, but it may have been a

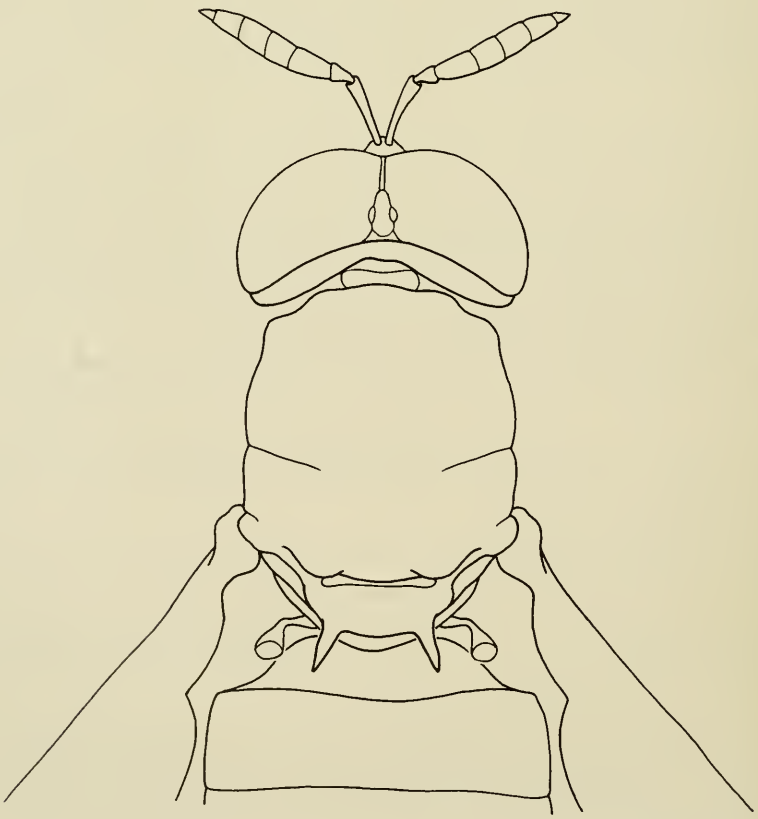

Fig. 1. Dorsal aspect of the head and thorax of *Stratiomys badius* showing the scutellar spines.

squirming of the entire body or a flexing of the thorax on the abdomen. These observations were made in Emmet County, Michigan, on 20 and 22 July of 1982.

Scutellar spines are not universally distributed in the Stratiomyidae, but they do occur commonly in members of the subfamily Stratiomyinae, mostly large and robust flies that are usually boldy marked with yellow or pale green stripes on a dark background. Not only boldy marked stratiomyids have scutellar spines but many of those that are would conventionally be considered generalized Batesian mimics of wasps. However, as indicated by the above observations, at least *S. badius* must be considered a Müllerian mimic of wasps and also of other Stratiomyinae if the latter also use their scutellar spines in defense.

S. badius is not alone among insects in its use of spines in defense against vertebrates. Townes (1972. Proc. Entomol. Soc. Wash. 74: 85–86) reported that diopsids (Diptera: Diopsidae) can also prick with their sharp scutellar spines. Freed (1982. Oecologia 53: 20–26) found that tree frogs repeatedly rejected *Euschistus* sp. (Hemiptera: Pentatomidae) after the humeral spines on the prothorax lodged between their jaws. Rothschild et al. (1970. Toxicon 8: 293–299) reported that adult *Acanthosphinx guessfeldtii* (Dewitz) (Lepidoptera: Sphingidae) can administer painful scratches with their tibial spurs. Smith (1884. Amer. Nat. 18: 727–728) described how a long-horned beetle (Coleoptera: Cerambycidae) of the New World tropics uses spines at the end of the antennae to deliver painful pricks when it is held in the fingers.

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